

HISTORY  
COLLEGE OF MEDICINE  
1959-1968

CHAPTER 18

DEPARTMENT OF  
PREVENTIVE MEDICINE

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HISTORY  
OF  
DEPARTMENT OF PREVENTIVE MEDICINE  
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Frederick H. Shillito, M.D.

I. INTRODUCTION

Prior to 1949, the teaching of Preventive Medicine and Public Health to medical students was the responsibility of the Department of Medicine. The War Accelerated Program of 1943-1944 forced a shortening of all programs of the College of Medicine with Preventive Medicine curtailed to instruction only in Industrial Medicine. Thus the significance of the latter in war time was recognized appropriately as a means to conserve manpower and to expand the work force of the nation.

With a return of full-faculty and re-institution of the four-year program, the necessity of presenting a comprehensive program to medical students in Preventive Medicine was appreciated. A new Department of Preventive Medicine (Public Health, Nutrition and Industrial Medicine) was established by action of the Board of Trustees June 14, 1948. Dr. Ben Houghton was the first Chairman of the Department. The guiding principles relating to teaching of Preventive Medicine in relation to illnesses and disabilities of this state and this community, rather than to underprivileged foreign communities, was stressed by emphasis of bedside teaching in the hospital. The teaching of Preventive Medicine was to be integrated into the programs of other departments of the College of Medicine.

In 1950, Dr. Houghton resigned to accept a position at University of Oregon. Responsibility of the department rested upon the Acting Chairmen, first Dr. John Porterfield, Ohio State Commissioner of Health and then Dr. John Prior, Department of Medicine and Assistant Dean. In 1951, Mrs. Martha Lewis was appointed Assistant Professor to guide the Division of Nutrition. Mrs. Lewis, as Instructor, had been Director of the Nutrition Section of the Department since 1948 when she was one of the original group serving under Dr. Houghton.

The search for a chairman was ended in 1954 with the appointment of Dr. William B. Ashe. This action marked the beginning of the modern era of the Department. Dr. Ashe re-affirmed the ideals of Dr. Houghton of the teaching of undergraduate Preventive Medicine in the College of Medicine. In addition, he proposed the development of a graduate program. The Masters program was approved July 1, 1956, by action of the Trustees. Training programs in Aerospace Medicine, Occupational Medicine and Nutrition were designed. Approval by the Council on Medical Education and Training, American Medical Association, was received in Aerospace Medicine on November 1, 1956, and in Occupational Medicine on May 1, 1957. Dr. Craig Wright matriculated as the first graduate student in the approved program and was enrolled on July 1, 1956, for the two year academic course in Aerospace Medicine. The following 18 months required Herculean efforts by Dr. Ashe and his small staff but the groundwork was laid out in teaching, research and service upon which the remarkable growth and many accomplishments of the Department of Preventive Medicine were to be realized in the following eleven years from January, 1959 through December, 1968, which is the period presented in this History

## II. ORGANIZATION OF THE DEPARTMENT OF PREVENTIVE MEDICINE

During the span of eleven years of 1958-1968 inclusive, the Department of Preventive Medicine has expanded so that a fully integrated comprehensive program is now being offered. The Chairman is assisted by a Vice Chairman, and Division and Laboratory Directors, each in charge of areas as follows -

- Division of Community Health
- Division of Aerospace Medicine
- Division of Occupational Medicine
- Graduate Program in Nutrition
- Aerospace Medicine Laboratory
- Vibration Laboratory

The Division of Community Health is responsible for all teaching given by the Department in epidemiology and public health to medical students. It is responsible for graduate level courses in epidemiology, public health and biometrics for graduate students in Preventive Medicine.

Administratively, this Division has five operating units, as follows:

1. The Biometrics Laboratory serves as a center for consultation for investigators in the life sciences. It has capability in designing studies and analyzing resulting data. Programming, key-punching and computer analysis are available to the investigators seeking assistance. A special data-plotter has been acquired, with capabilities of enhancing studies of geographic and demographic distribution of health variables.
2. The Epidemiology Unit is concerned mainly with long-term studies, as exemplified by the study of the Primary Prevention of Coronary Heart Disease.
3. The Community Health Unit is concerned mainly with the development of the graduate program in comprehensive health planning and the preparation of a new Ph.D. curriculum for the Department.
4. The International Health Unit has been working in Africa and South America and is developing a new program with the Merzhon Foundation for health studies in the Caribbean and South America.
5. Regional Medical Program. This unit has undertaken the development of a Critical Data Base for the planning of the Ohio State Regional Medical Program. This service and research activity involves the collection and interpretation of health related information regarding the 61 counties served by the OSRMP.

The Division of Aerospace Medicine is responsible chiefly in graduate teaching in areas of environmental physiology, the practice of aerospace medicine, bioelectric applications and medical aspects of human engineering. Supervision of research studies leading to a thesis presentation in partial fulfillment of the requirements of the M.S. degree is given in the second year. In addition, it is necessary to augment the academic and research training. The graduate student in Aerospace

Medicine is also a Resident of University Hospital and as such is given practice in clinical aerospace medicine. In addition each resident is given the election of flight training through the cooperation of the Department of Aviation (College of Engineering).

Occupational Medicine has responsibilities toward graduate studies similar to those of the Division of Aerospace Medicine. The Division is responsible for graduate courses in Toxicology and Industrial Medicine Practice. It is also responsible for the resident training in Occupational Medicine which includes field assignments to local industrial facilities. In the second academic year, this division supervises the research project and thesis presentation of the graduate student in Occupational Medicine.

The Graduate Program in Nutrition is the remainder of the Division of Dietetics and Nutrition which was organized as part of the Department of Preventive Medicine in 1954. As such it was responsible for teaching of both Medical Dietetics to undergraduates and Nutrition to graduate students. In 1967, the Medical Dietetics part of the program was transferred to the School of Allied Medical Professions. As at that time the School had not yet developed a graduate program, Preventive Medicine continued to have the responsibility of the Master of Science program and of the Nutrition residency under the direction of Mrs. Lewis.

The Aerospace Medical Laboratory is responsible for most of the aerospace research done in the Department of Preventive Medicine by medical students, graduate students and staff. This facility has been available throughout the entire span of eleven years, from 1958 to 1969. Research in the premises in Wiseman Hall rotate around the operation of the altitude chamber. This chamber is man rated and observations on the effect of the stress of low barometric pressure on humans can be observed and monitored in depth. Not only does the individual aerospace resident plan and carry out his own research project but throughout his second year he is

kept involved also in participating in research studies of others. Periodically he assists in aeromedical indoctrination courses designed for pilots. The courses involve the stress of rapid decompression. Another service function is airplane accident investigations for the Federal Aviation Agency. Such investigations give the aerospace residents an opportunity to observe the circumstances of accidents in the field. Another service function of the laboratory is the airmen medical examinations (FAA) and disability evaluations. Residents actively participate in these examinations on a semi-independent basis. In addition to the facilities in Wiseman Hall, space is allocated to the Aerospace Medical Laboratory at Don Scott Field. Much Aerospace research is carried out in-flight in cooperation with the Department of Aviation in the College of Engineering. In specially equipped rigid-wing aircraft as well as helicopters, pilot performance under various stresses during actual flight can be monitored and appraised.

The Vibration Laboratory was established in 1958 and since then has continuously and steadily fulfilled its primary mission of investigating the physiological and pathological effects of vibration on man and animals. Initially no teaching responsibilities were envisioned for this laboratory. However, because of the talent in certain staff members, the responsibility for teaching Industrial Hygiene to graduate students has been assumed. The laboratory has also developed an advisory service to aid residents who run into engineering, technical bio-instrumentation or statistical problems in connection with research projects. Finally, during the years when the laboratory was located at the Research Foundation on Kinnear Road, weekly informal interdepartmental seminars were held for students and staff members from the Departments of Preventive Medicine and Physiology. The Vibration Laboratory also has provided the setting and equipment needed for training Preventive Medicine graduate students in research methods and has been very active in this part of their curriculum.

### III. NARRATIVE HISTORY 1958-1968

By the beginning of 1958, Dr. Ashe had assembled the nucleus of a faculty. He had made enough progress in this direction so that the teaching needs of medical students in epidemiology and public health could be continued and instruction and direction of the new divisions of Occupational Medicine and Aerospace Medicine could be satisfactorily fulfilled. Nutrition and Medical Dietetics were already well established. Dr. Ashe himself had full-time duties as Chairman of the Department, but managed in addition, to carry a heavy teaching load, particularly in regard to subjects taken by medical students and in Occupational Medicine for graduate students. Dr. Bertram Dimman and Mr. Edward J. Largent had accepted appointments in 1957 as Assistant Professors. Dr. Dimman organized and presented the course in Applied Toxicology as well as the course in Principles and Practice of Occupational Medicine. Mr. Largent took the responsibility for instruction in Industrial Hygiene. Dr. Earl Carter who had been working several years in the Department of Physiology and in the Aviation Laboratories of Dr. Fred Hitchcock gave the courses in Environmental Physiology and Aerospace Medicine. Dr. Carter also held an appointment as Assistant Professor in the Department of Medicine. Another full-time member of the faculty in Preventive Medicine was Mrs. Martha N. Lewis in Medical Dietetics and Nutrition. This small group of full-time faculty members in the Department was augmented by about eighteen part-time faculty members serving on little or no salary. The names of these persons who contributed so much to the Department are listed in the faculty biographies. Of special interest, however, is the fact that Dr. William W. Davis has held a part-time appointment as Assistant Professor continuously since 1953. Dr. Harold W. Mammen was full-time instructor in Preventive Medicine with the responsibility of directing the Personnel Health Center of the Medical School and



University Hospital. Subsequently he was to alter his schedule to make it possible to take courses in the Occupational Medicine program and to become qualified for the practice of this speciality.

In 1958, two residents namely Dr. Wright already mentioned, and Dr. William A. Jones, were in the Masters program. A special arrangement was made for Dr. Jones whereby he completed his research work during the first year of his residency. This meant that he had the advantage of taking his first year or core subjects with the next first year class which started on July 1, 1958. In this class were four residents in Aviation Medicine, and two in Occupational Medicine.

For several years Dr. Ashe had recognized the wide spread exposure of the general population to vibration and had noted the lack of adequate evidence to evaluate its effect. He had proposed a research project and in 1958 was awarded a grant of the National Institutes of Health to investigate on a broad basis the physiological and pathological effects of vibration on man and animals. With the cooperation of Dr. Marco of the Department of Mechanical Engineering and with the further help of Professor Charles Roberts, a shake table was assembled which performed well. Dr. Carter and Dr. Ashe carried out early experimental runs on this machine. It soon became apparent that vibration research required a multi-disciplinary approach and that Engineering capability should be supplied. In September, 1958, Dr. Ashe appointed Mr. Lester Roberts as Assistant Professor and Director of the Vibration Laboratory. Dr. Ashe was well acquainted with the abilities of Professor Roberts as they had worked together at Kettering Laboratories and the Armored Medical Research Laboratories at Fort Knox. In the later months of 1958, Professor Roberts moved the shake table and other equipment that has been acquired to space in Area 400, Research Foundation, Kinnear Road. The space was secured through the generosity of Dr. Hitchcock who condensed his Aviation Physiology Laboratory in order to make room for the new vibration laboratory of Preventive Medicine.

In July, 1959, a new class of residents, including four in Aerospace Medicine, arrived to start their two year academic course on July 1, 1959. This group marked the beginning of a regular sequence of residents coming in on July 1st of each year and marked the end of special tutorial and other methods to accommodate single students as necessarily had been done in previous years. The course of study given to the graduate students in the academic two years was very similar to the program of today. With more demand for his time in the Aerospace program, Dr. Carter became more identified with the department and was placed on a full time basis and physically moved into offices of the department. It should also be mentioned that Dr. Joseph F. Tomashefski of the Departments of Medicine and Physiology was making a significant contribution to the teaching and research program for students. His pulmonary function laboratories in the Ohio Tuberculosis Hospital were utilized for research. In his first year of residency, Dr. Charles E. Billings, under direction of Dr. Carter, utilized these facilities for research in the area of work physiology and fatigue. Also by 1959, Dr. Dinman secured space in the Pathology Department on the fourth floor of Starling Loving Building. Here he set up exposure chambers and pursued his research in carbon tetrachloride poisoning and enzyme activity. Thus it became possible for occupational residents to do research in a laboratory under the direction of Dr. Dinman. The activities of the Vibration Laboratory were also increasing with a number of residents working in that area. Dr. George Hoover, having recently received his Ph.D. degree in biology from the University of California, joined the staff. He initiated and carried out special studies, was advisor to students and helped organize teaching in environmental physiology with Dr. Billings. In March, 1961, construction on Wiseman Hall was completed. With the interest and support of Dean Meiling, whose leadership and pioneering work in the field of aerospace medicine had long been recognized, space was permanently allocated to Preventive Medicine with an altitude chamber plus

additional rooms for supporting mechanical and laboratory activities. The space was to be occupied by the Aviation Medicine Research Laboratory. Between Dr. Ashe and Dr. Carter there has been much planning in connection with these facilities and their foresight is certainly to be commended when the accomplishments of the AMRL over the eight years of its existence are reviewed. In June, 1961, Dr. Carter resigned to accept a staff position at Mayo Clinic. Dr. Billings just finishing his second year of the Aerospace residency was induced to stay on for the third year of field training here in Columbus. Not only did Dr. Billings help to fill the void left by Dr. Carter, but he was to go on to a faculty appointment in the next year. He has remained Director of the laboratory and has led it to a position of national prominence in many phases in Aerospace research.

In February, 1961, arrangements were completed by the American Board of Preventive Medicine for reinspection and evaluation of the Ohio State University program in Aviation Medicine and Occupational Medicine. Chairmen of the Site Committee was Dr. Wilson G. Smillie with Dr. Glen R. Leymaster, and Colonel Harold V. Ellingson as members. The committee was complimentary, particularly in regard to the tutorial attention paid to individual residents and to the excellence of their research work. The academic programs in Aerospace Medicine and Occupational Medicine were fully approved for another three year period. The third year field training in Aerospace Medicine was deemed to be so closely affiliated with the faculty of the Department of Preventive Medicine of Ohio State University that it too was given approval as satisfying the American Board of Preventive Medicine requirements in Aerospace Medicine. With the training being provided it was deemed that the Master of Science degree given to Ohio State graduates was fully the equivalent of the Master of Public Health given when training is secured at schools of public health. The committee strongly recommended that further strength should be provided in the core subjects of epidemiology and public health and suggested that it would

appear that these objectives could be secured best by appointment of a full time senior faculty man. The committee also recognized the overload being placed on the members of the Preventive Medicine faculty because of their few number and recommended that another senior appointment be considered for a man with board certification in Preventive Medicine (Aerospace Medicine). Dr. Ashe had been seeking such a man and his efforts came to culmination on November 1, 1961, when Dr. Frederick H. Shillito was appointed Professor in Preventive Medicine (Aerospace) with a joint appointment in the Department of Medicine. The appointment of Dr. Shillito was considered to give further stability to the rapid expansion of the Department of Preventive Medicine as he reflected wide personal experience in Internal Medicine, in Aerospace Medicine, and in Occupational Medicine. In regard to fulfilling the needs in epidemiology and public health, Dr. Ashe was highly desirous of securing Dr. Martin D. Keller who previously had been a part time appointee in Preventive Medicine in connection with his duties with the Ohio Department of Health several years previously. Dr. Keller had left Columbus for Boston, but was persuaded to return and to accept an appointment in the summer of 1962, as Associate Professor in Preventive Medicine (Epidemiology and Public Health). Dr. Keller because of his training and experience in Internal Medicine also received a joint appointment in the Department of Medicine. These appointments gave additional backup strength to the Chairman.

With the additions of the staff to the Department of Preventive Medicine as noted above, Dr. Ashe, Chairman, felt that a time had come for certain administrative changes. Effective May 1, 1962, he established the following subdivisions of the Department and made staff appointments as follows: Director, Division of Occupational Medicine, Dr. Dinman; Director, Division of Aerospace Medicine, Dr. Shillito; Director, Division of Dietetics and Nutrition, Mrs. Lewis; Director, Division of Epidemiology, Dr. Keller; Director of Aviation Medicine Research Laboratory,

Dr. Billings; Director of Kinnear Road Laboratories, Mr. Roberts. By 1963, substantial financial support from outside of the University in the form of \$64,800 a year training grant in Occupational Medicine from the National Institutes of Health, four Atomic Energy Commission fellowships and two USAF officers on training status had been secured. In addition, by this time approximately \$150,000 annual research funds had been obtained from Government and industrial sources. Such support put the Department in a far better financial position than had been the situation previously. In May, 1963, Dr. Ashe participated in an ICNND survey of the nutritional status of Venezuela at the request of the Venezuelan government. Since coming to Ohio State University, Dr. Ashe had participated in a number of these nutritional surveys in different geographical areas. In recognition of ICNND services, he was given the Bernard O'Higgins Award of Merit by the government of Chile. The Venezuelan survey was to take him away from Columbus for two months and marked the last time he was able to undertake outside work of this magnitude because of his health. From October, 1963, to January, 1964, Dr. Ashe was absent from the office although from his home base he kept a close eye on the departmental affairs. During this period, Dr. Dimman, Director of Occupational Medicine, accepted the responsibility of administrating the Department as he frequently had done during other absences by Dr. Ashe. In January, 1964, Dr. Ashe returned to the office on a restricted schedule. He devoted much of his available time in making plans for a Department of Preventive Medicine research facility to be constructed as an addition to Wiseman Hall. By the spring of 1964, when Dr. Ashe sent in his proposal to Public Health Service, outside support to the Department totalled more than \$342,000 per year of which \$142,000 was in the form of training grants in Occupational Health and in Aerospace Medicine. The remaining \$200,000 was received for research projects. In July, 1964, Dr. Ashe took his annual vacation with every expectation of returning to again assume the full authority and responsibility of the Chairmanship of the Department. In early August, however, it became evident to

him that he would need an extended medical leave of absence with time completely free of duties in order for him to regain his former strength and health. Dean Meiling approved this plan and appointed Dr. Shillito as Acting Chairman for whatever time it would be necessary for Dr. Ashe to remain away from work. Dr. Glen E. Gresham, an internist and epidemiologist, had joined the staff on July 1, 1964. This appointment was particularly important as Dr. Keller had been tied up in extraordinarily heavy teaching loads. With Dr. Gresham with him, Dr. Keller was able to turn to developing other phases of his Division of Epidemiology and Biometrics as it was now called. The latter part of 1964, really marked the beginning of a very rapid expansion in the teaching of Epidemiology and Public Health to undergraduate medical students and in Biometrics and Advanced Epidemiology and Public Health for the graduate students. In the spring of 1965, an application was made to the United States Public Health Service for a curriculum augmentation grant for the implementation of the teaching of public health related subjects to undergraduate medical students. The application received very favorable review and the Department subsequently received a total funding of \$266,000 over a five year period.

In June, 1965, at the end of his medical leave of absence, it was all too evident that Dr. Ashe was incapacitated permanently and would be unable to resume the duties of the Chairmanship. He submitted his resignation which was accepted regretfully by Dean Meiling. Dr. Ashe was designated Professor Emeritus with all the honor and respect which was his due. Dr. Ashe died a few months later on February 27, 1966, thus leaving to others the privilege of carrying on the activities initiated by his far-sighted planning and by his devotion to the Department. Dr. Shillito had been continuing as Acting Chairman and served on the Committee to search for a new chairman. By early spring of 1966, a selection had been made and Dean Meiling named Colonel Harold V. Ellingson, M.D., MPH, Ph.D. as Chairman of the Department of Preventive Medicine effective June 1, 1966. Since 1962,

Dr. Ellingson had served as Commander, USAF School of Aerospace Medicine. In all he had spent over twelve years at the School of Aerospace Medicine and was particularly cognizant of the activities and accomplishments of the Division of Aerospace Medicine at Ohio State University. Dr. Ellingson had been certified in Public Health by the American Board of Preventive Medicine in 1948, and additionally was certified in Aerospace Medicine as a member of the Founders Group in 1953. He had spent nearly twenty-five years in the Army and Air Force at the time of retirement in 1966.

In September, 1965, the Department lost the services of Dr. Dinman, Professor and Director of the Division of Occupational Medicine who left Columbus to accept an appointment at the University of Michigan. Dr. Dinman had served in the Department since 1957, and had been a strong support for Dr. Ashe during the early years when the staff was small and overburdened with many tasks and responsibilities. He laid a firm foundation of the Occupational Medicine program in teaching, research and service. Capt. John H. Schulte, MCUSN, was Director of Submarine and Radiation Medicine in the Bureau of Medicine and Surgery, Washington, D.C.. In a consulting capacity he contributed greatly to the teaching of Occupational Medicine. Effective upon his retirement from the Navy in 1966, Dr. Schulte was appointed Professor and Director of the Division of Occupational Medicine.

In June of 1966, when Dr. Ellingson became the new Chairman, a strong position through University support and teaching grants and research grants had already been attained. Dr. Ellingson supported the onward impetus of all of the sections of the Department and under his leadership the Department has thrived and has become one of the largest departments of Preventive Medicine to be found in any school of medicine. In the fall of 1966, Dr. Richard A. Lanese was added to the Division of Epidemiology and Biometrics as an assistant professor. His training was in clinical <sup>A</sup>psychology and experimental methodology. He was added primarily to give further strength in the teaching of medical students. The capability of the

division was further increased by two additional grants, one of a years duration of \$10,800 for student projects in Preventive Medicine. Shortly thereafter on March 1, 1968, a student apprentice grant of \$72,000 over a five year period was obtained to support medical students in a special elected program of community health. The number of students involved in the special studies in preventive medicine increased steadily. By 1967, over fifty students have participated in the program. Dr. Franklin R. Banks, Robert C. Chase, Donald A. Campbell, and Mrs. Eleanor M. Roman joined the Division of Epidemiology and Biometrics which allowed further expansion of the teaching and research program. The teaching program and extensive research program had been launched and the division had greatly enlarged. Its name was changed in 1967, to the Division of Community Health to better express the overall orientation.

Since Dr. Ellingson's arrival in Columbus in June, 1966, growth in other divisions and laboratories of the Department have paralleled those taking place in Community Health but not in the same magnitude. Nutrition, Aerospace Medicine and Occupational Medicine were well established in the early years and an expansion of these divisions would not be expected to keep pace with the activities in a new division of Community Health. In March, 1967, Dr. Robert L. Wick, Jr. was appointed as Assistant Professor and Assistant Director of the Aviation Medicine Research Laboratory. Dr. Wick is certified by the American Board of Preventive Medicine in Aerospace Medicine. He received his specialty training at Ohio State. Mr. Robert Bason continued as Supervisor in the laboratory. As mentioned previously this laboratory has remained under the directorship of Dr. Billings and has gained a national recognition on the basis of a great deal of work in teaching, research and service in Aerospace Medicine. At least some although by no means all of the contribution of this laboratory to the Department of Preventive Medicine will be mentioned on sections on Teaching and Research.



The role of Medical Dietetics and Nutrition within the Department was changed when the responsibilities of Mrs. Lewis in respect to Medical Dietetics for undergraduate students was transferred to the School of Allied Medical Professions in July, 1967. Expansion and growth of the division marked the years in which it was in residence in the Department of Preventive Medicine. Some of this growth and changes in teaching techniques will be described in the section on Undergraduate and Graduate Teaching. In regard to the graduate program in Nutrition which has remained in Preventive Medicine, Miss Linea Anderson, M.P.H. was appointed as Associate Professor in Preventive Medicine (Nutrition) on June 1, 1968, and assumed the administrative leadership of the Masters program for the Nutrition Division.

In connection with Dr. Ellingson's election as Secretary-Treasurer of the American Board of Preventive Medicine, the headquarters and offices of the Board were moved to Ohio State University in the autumn of 1967. This activity has given the Department a useful relationship with the entire Preventive Medicine community in the United States.

The Preventive Medicine Research Laboratory of Wiseman Hall was ready for partial occupancy in the autumn quarter of 1968. Certain members of the department moved into the new building. This group included Dr. Schulte, Mr. Jack C. Carmichael, Assistant Professor in Preventive Medicine (Industrial Hygiene) and Assistant to the Dean and certain members of the staff of the Division of Community Health including Mr. Marion E. Violet, Division Administrative Assistant and the key punch operation and programmers of the Biometrics Laboratory.

The physical facilities of the Vibration Laboratory directed by Mr. Roberts were moved from Kinnear Road to the new building. Additional space also was made available to the Aviation Medicine Research Laboratory for various purposes. Dr. Spencer Turner, Chief Aerospace Resident, and all other Aerospace and Occupational residents, were given for the first time, adequate work space.

With laboratory space now available the search for research personnel was begun. In December of 1968, Mr. Frank Weir, PH.D. joined the Division of Occupational Health as Assistant Professor in Preventive Medicine (Toxicology). His practical experience and academic training will give needed capability in the area of industrial intoxications.

#### IV. TEACHING

UNDERGRADUATE: In 1961, a grant was obtained by the Division of Nutrition from the Kellogg Foundation of \$256,000 over a period of six years for the purpose of initiation of medical dieteticans. Mrs. Lewis, Miss Wenberg and Miss Sharp organized a four year program for undergraduates leading to the degree of Bachelor of Science. The first class of nine students graduated in June, 1964. Subsequent graduating classes have consisted of:

1965	10
1966	13
1967	13

In the summer following the graduation of the 1967 class, the undergraduate program was moved to the newly organized School of Allied Medical Professions. While in the Department of Preventive Medicine, Mr. John Casbergue was added to the faculty and assumed leadership in one of the unique features of the undergraduate training which is in the field of application of computer science to dietetics and nutrition.

When this undergraduate program was transferred, it marked the end for the present, of any significant amount of teaching in Preventive Medicine to undergraduates of the University.

MEDICAL STUDENTS: Under the general guidance of Dr. Keller, instruction in Preventive Medicine for medical students has been updated and changed radically. The system of didactic lectures has been discarded. In the first year the medical

student takes (Preventive Medicine 624), Quantitative Methods in Medicine for three credit hours. Instruction and experience is given in Research Design, Statistical Analysis, Critical Evaluation of Research Reports and Epidemiological Methods. In the second year, the Department of Preventive Medicine participates in a segment (PM 602) of the College Course, Comprehensive Evaluation of the Patient. It consists of approximately 20 hours of classroom work for the sophomore medical student. Major diseases are considered from the point of view of epidemiologic studies. In lectures and conferences, community and environmental factors such as radiation, air pollution and accidents are considered from the point of view of the effect of these phenomena upon rates of disease in the community. In the third and fourth years, medical students are offered electives in Preventive Medicine (PM 793) which are fulltime programs of one to three months. In all approximately 30 students are accommodated per year in these electives with more than two thirds of them taking electives in Community Health, with the remainder taking Aerospace Medicine, Environmental Health, Occupational Medicine or Nutrition. Through the international unit of the Division of Community Health, students from the Ohio State College of Medicine have travelled to Canada, England, Switzerland, Puerto Rico, Virgin Islands, Nygeria, Kenya, Central African Republic, Bolivia and Australia. They have been research associates and observer participants in governmental overseas service programs. Since the start of the elective system, fifty-two students have taken a month or more in Community Health (both domestic and abroad) and a total of approximately twelve have done the same in the other disciplines. In their fourth year, medical students take (PM 735) Community Health. Sixty instruction hours are spread out over one month. The course is given twice yearly; October and February. It is in collaboration with clinical departments. Two thirds of this course is concerned with community health organizations which are presented by lecture, seminar and field trips. The other third of the course is advanced

epidemiology and biometrics stressing computer techniques. Instruction in Medical Dietetics and Nutrition has always been an integral part of the Preventive Medicine for medical students. As changes and innovations of teaching of Preventive Medicine have been introduced into the curriculum the methods of giving medical dietetics have also changed. Previously it has consisted of a two week segment of time during which the medical student had a daily noon meal representative of one of the various types of diets used in hospital practice. At the present time this course has been shifted to the fourth year and is given in conjunction with PM 735. As one half of the seniors take the course in October and the second half of the class in February, it means there are 75 students in attendance at one time during the course. They are divided into groups so that each student is given five noon day sessions during the course when he eats the special diet meals and has seminar discussions of diets in various disease states. Demonstrations and discussions are arranged to meet the express needs of the medical students.

GRADUATE: During the years 1958-1969, the formal graduate program of the Department of Preventive Medicine has been largely related to Aerospace Medicine, Occupational Medicine and Nutrition. In Aerospace Medicine and Occupational Medicine two years of resident academic work are required unless the student presents evidence of acceptable training which is equivalent to some of the courses in the curriculum. The exceptions to the two year requirement have been very few. The graduate program is designed to meet the requirements prescribed by the American Board of Preventive Medicine in Aerospace Medicine or Occupational Medicine. It is also a Board requirement that the Master of Science degree be the equivalent of a Master in Public Health. This equivalency has never been difficult to prove. Plan A which requires the submission of a thesis based on an original investigation is required of each graduate student who desires his graduate studies to satisfy the Board requirements. Plan B without a thesis being required has been given only rarely

and the students are not considered to have completed the residency in their speciality. The first year in these graduate studies is concerned with CORE subjects commonly considered to be requirements of a M.P.H. degree. The major courses are Epidemiology and Public Health, Environmental Physiology, Biometrics, Bioelectronic Applications, and Toxicology. Four quarters are taken up under these studies plus others more specifically oriented to the specialities of Aerospace and Occupational Medicine. In the first year a total of fifty-four hours of graduate credit are obtained. These students are required, however, to remain for four more quarters and to accumulate as much as sixty-two more credit hours making a total of 116 credit hours. Obviously the student is well on his way toward satisfying the requirements for the Ph.D. degree. Much of the credit in the second year is related to research work upon which the student bases his thesis. In most instances, the research performed and the thesis presented in partial fulfillment of the requirements of the Master of Science degree compare favorably with the thesis for the Ph.D. degree. Probably the best evidence of the quality of the graduate program lies in the performance and attainment of graduates. They are occupying leading positions in the field of Aerospace and Occupational Medicine in research centers, teaching positions, industry, and at Aviation and Space Institutions. The Masters program in Nutrition is administered under the direction of Mrs. Lewis with prescribed courses. Generally Plan A requiring a thesis is required. Plan B again is used infrequently and in special cases only.

In late 1968, aided by a planning grant from the Public Health Service, Dr. Keller undertook the planning for a Ph.D. program. Students would be able to seek the Ph.D. in the fields of Community Health, Environmental Medicine, including Aerospace and Occupational Medicine and General Preventive Medicine. Other fields will be added when appropriate. During the eleven years from 1958 through 1968 the following Master of Science degrees were awarded!

Wright, C. Craig (Av. Med.), 1958; Billings, Charles E. (AM), 1960; Donaldson, Robert T. (AM), 1960; Fox, Thomas A. (Occ. Med.), 1960; Fraser, T. Morris (AM), 1960; Lerner, Sidney I. (OM), 1960; Catterson, A. Duane (AM), 1961; Clyde, Pauline (Nutrition), 1961; Gaueman, John V. (AM), 1961; Mammen, Harold M. (OM), 1961; Hamdi, Ebtissam (OM), 1962; McConkey, Rosemary (Nutr.), 1962; Wick, Robert L. (AM), 1962; Carroll, James R. (AM), 1963; Linder, Carol (Nutr.), 1963; Puskas, Albert (AM), 1963; Seubert, Sally (Nutr.), 1963; Tanaka, Shiro (OM), 1963; Van Ness, Ada Marie (Nutr.), 1963; Carpentier, William R. (AM), 1964; Cumpston, Alan (OM), 1964; Figarola, Tulio R. (AM), 1964; Hoon, Ruth (Nutr.), 1964; Kelly, Ira M. (OM), 1964; Reinhardt, Charles F. (OM), 1964; Storter, Barry M. (OM), 1964; Zeiglschmid, John F. (AM), 1964; Belk, Harold D. (OM), 1965; Droescher, John J. (AM), 1965; Evans, William E. III (AM), 1965; Feeley, Donald R. (AM), 1965; Finkelstein, Silvia (AM), 1965; Hatfield, Theodore R. (OM), 1965; Jones, William A. (AM), 1965; Lyon, Walter (OM), 1965; Redfield, John T. (OM), 1965; Robb, Bernadine (Nutr.), 1965; Thompson, Leonard J. (AM), 1965; Wooden, Phyllis (Nutr.), 1965; Byrne, Thomas G. (AM), 1966; Wolf, C. Richard (OM), 1966; Elliott, John C. (AM), 1967; Fagin, Roy (AM), 1967; Giraldo, Julian (AM), 1967; Orbegozo, Jose C. (OM), 1967; Sayers, Sandra (Nutr.), 1967; Burke, Linda (Nutr.), 1968; Garner, Walton R. (AM), 1968; Hall, John E. (AM), 1968; Hoffler, George W. (AM), 1968; Karp, Nancy (Nutr.), 1968; Turner, Harry S. (AM), 1968; Westin, Jerome B. (AM), 1968.

## V. FACILITIES

The administrative offices of the Department of Preventive Medicine have been located for over 10 years on the first floor wing of Starling Loving Building. In this space was room B-150 which for years served as the only classroom space assigned to the Department of Preventive Medicine exclusively for its own teaching. This space has now been converted into administrative and faculty offices. In addition, several members of the Division of Community Health are located on the second floor of the B wing of Starling Loving. This space became available when the School of Nursing moved into its new building. During the 60's space in Starling Loving as in other parts of the College of Medicine was exceedingly tight and Preventive Medicine personnel were temporary occupants of odd rooms here and there in the building at various times. In particular it was always difficult to find space for a center and study area for the residents. From time to time they were located all the way from the basement of Starling Loving to the fourth floor. As mentioned previously, this situation has been remedied by the completion of the addition to Wiseman Hall and the residents are now well housed in those laboratories.

During the span of years covered by this history research facilities for faculty and students of the Department of Preventive Medicine have been sufficient to support a very large amount of productive studies. Until 1968, the Vibration Laboratory was located at the Research Foundation on Kinnear Road. In spite of the distance between the Kinnear Laboratories and the College of Medicine Center, this unit was utilized to its fullest. The aid and advice of Mr. Roberts, Dr. Dines, Mr. Hoover and others in the Vibration Laboratory was constantly sought. Dr. Dinman's laboratories in Toxicology were necessarily spread out because of the lack of space. Originally, arrangements were made to utilize space in Pathology on the fourth floor of Starling Loving where many ancillary aids such as electron microscopy were available to make it possible for Dr. Dinman working with Dr. Frajola and

Dr. Scarpelli and Dr. Hamdi to complete a combined enzymological pathological and electron-microscopy study of carbon tetrachloride toxicity under rigidly controlled inhalation exposures. In 1964, Dr. Dinman employed Dr. Gertrude Orth and established a laboratory primarily for enzyme chemistry in Wiseman Hall near to the Aviation Medical Research Laboratory. This laboratory continued for some time after Dr. Dinman left Columbus but eventually was moved out to make room for an acoustic chamber of the Otology service. The biochemistry laboratory was moved to the third floor of Starling Loving Building. The laboratory personnel participated in the pilot Coronary Prevention Study and its character changed from emphasis on enzymology to lipids. The laboratory still occupies this space and will remain there for special determinations. All automated biochemical determinations will be carried out in other space in Hamilton Hall.

Finally in 1968, came the culmination of years of planning and making arrangements to centralize research activities of the Department in Wiseman Hall. The Aviation Medicine Research Laboratory under Dr. Billings had continuously occupied space on a permanent basis on the first floor of Wiseman Hall. In these quarters were the Altitude Chamber and the equipment for research requiring simulated altitude. It was logical to leave this facility undisturbed and to bring other research units of the Department into the area of the AMRL. Thus came about the construction of the east wing of Wiseman Hall. This wing has space adequate at the present time for the vibration, toxicology, biochemistry, industrial hygiene and biometrics laboratories. A man-rated three chamber hyperbaric tank has been installed. This facility will make it possible to investigate the physiological effects of deep subsurface dives. These facilities at Wiseman Hall include the Aviation Medicine and Research Laboratory and the new wing/have a total floor space of approximately 15,000 square feet.

The Coronary Prevention Research project under direction of Dr. Keller was originally housed on the fifth floor of Means Hall which was previously the Ohio Tuberculosis Hospital. The study requires a large number of patient visits and



examinations. In 1968, the second floor of a newly constructed building at 1357 W. Lane Avenue was leased. Architectural drawings and later construction of offices, examining rooms, meeting rooms, administrative offices a nutrition laboratory and equipment rooms for pulmonary function and electrocardiography were planned. Actually this unit is a Preventive Medicine Clinic in every sense of the word. At the present time the coronary prevention study offers great opportunities for research by graduate students but it is anticipated that other preventive medicine clinical activities will some day use this space or similar space elsewhere.

## VI. RESEARCH

A comprehensive program of research started in the Department of Preventive Medicine at the beginning of the period i.e., 1958, covered in this history. Soon Dr. Dinman had secured laboratory space, chiefly in the Pathology Department, and as previously mentioned, his researches in connection with exposures to low concentrations of carbon tetrachloride and the accompanying enzyme changes were initiated. At about the same time, Mr. Roberts established the Vibration Laboratory at Kinnear Road in the Research Foundation. One of the first studies undertaken in the laboratory was in conjunction with Dr. Dinman in 1959-1960 when serum enzyme levels in dogs subjected to vibration were investigated. In 1960, Mr. Hoover associated by now with the Vibration Laboratory with Dr. Ashe, supervised the study of hand injury from vibrating tools which was a clinical study carried out at North American Aviation Corporation at Columbus. With the coming of Dr. John Dines, who had been in the Department of Physiology and was transferred to the Vibration Laboratory to replace Mr. Hoover who resigned to accept an outside position, the direction of research in the Vibration Laboratory began to emphasize the cardiovascular effects associated with vibration. The Vibration Laboratory also has been directed strongly by Mr. Roberts toward development of previously lacking techniques of quantitative studies in the field of vibration. The Vibration Laboratory in 1968 moved to the new addition in Wiseman Hall. Throughout the existence of the Vibration Laboratory

it has been an opportunity for graduate students to carry out research projects. Mr. Roberts, Mr. Hoover and Dr. Dines in addition have been of great help to graduate students on an advisory basis in helping the students over certain stumbling blocks that have come up in their research taken in other areas. Also starting with the beginning of the period covered by this report was the creation of the Aviation Medicine Research Laboratory in 1958. This facility has been a rich source of research studies to be pursued by graduate students. The larger studies carried out in the AMRL include a five year study on passenger stress in jet aircraft cabins carried out by Drs. Shillito, Tomashefski and Billings; the effects of hypoxia on energy cost of muscular exercise by Dr. Billings; the effects of physical conditioning in partial acclimatization to hypoxia on work tolerance at high altitudes by Dr. Billings and Dr. Donald K. Mathews of the Department of Physical Education, as well as in-flight studies carried out cooperatively with the Department of Aviation.

In 1963, through contractual arrangements with the U. S. Air Force it became possible to utilize the extensive Aerospace Medical Research Facilities of the Wright Patterson Air Force Base. Since then, six graduate students have carried out their studies and developed their theses under the joint direction of an advisor at Ohio State University and an advisor located at Wright Patterson Air Force Base. These include Lt. Col. Joseph Quashnock, Col. Ray Yerg, Col. William C. Kaufman, Dr. Alvin Hyde, Dr. Anthony Thomas, Dr. Ray Murray and Dr. Michael McCally. These studies have ranged from the observation of heat stress to pulmonary function observations associated with severe hypoxia. The last research was carried out in the Toxicological division of the Aerospace Medical Research Laboratories of Wright Patterson Air Force Base.

It is felt the research production in the Department, particularly by graduate students, has been outstanding and has helped to create the position of leadership in the field of environmental Preventive Medicine. Research in Nutrition has been

very strong. Much has been done in association with clinical departments. More recently a strong program in research in community health has been initiated by Dr. Martin Keller, particularly in connection with the prevention of coronary disease. This research has led to the establishment of a Preventive Medicine clinic located on West Lane Avenue which offers great opportunities particularly for future students in the field of prevention of clinical diseases.

During 1968, the installation in Wiseman Hall of a hyperbaric chamber suitable for extensive research in deep subsurface dives was supervised by Mr. Roberts for early completion in 1969. This facility under the direction of Dr. John H. Schulte assisted by Dr. Weir will offer an entirely new area for student and faculty research in the future. Dr. Schulte is also planning the installation of exposure chambers to reactivate studies related to toxic exposures.

Over the years the interests of the faculty members in research have been varied and numerous. Former members of the department include Dr. Ashe whose research was in the broad areas of Global Nutrition, Vibration, and Program Research in Teaching of Environmental Medicine; Dr. Carter in Respiratory Physiology and Clinical Aviation Medicine; Mr. Casbergue in Computer Applications to Food Service; Dr. Dinman in Biochemical Aspects of Cellular Poisoning and Mechanisms of Toxicological Processes; and Mr. Largent in Fluoride Intoxication and Heat Stress.

Following are names of faculty members currently active in departmental research projects.

Billings, Charles E.: Exercise physiology; Physiological Alterations at High Terrestrial Altitudes; Effects of stress of men in flight environment.

Gresham, Glen E.: Epidemiology of Medical Illnesses and Diseases; Arthropathies.

Keller, Martin D.: Epidemiological Factors in Chronic Diseases; Global Community Health Studies; Effect of Therapeutic and Preventive Intervention in Cardiovascular Disease prone individuals.

Lewis, Martha N.: Nutrition and Medical Dietetics Education; Nutrition Following Surgical Procedures and Chronic Medical Conditions.

Roberts, Lester B.: Vibration and Ultrasonics; Bio-instrumentation; Hyperbarics.

Schulte, John H.: Stresses of Hyperbaric Environment; Atmospheric Contaminates; Radiation Effects.

Shillito, Frederick H.: Altitude Tolerance in Chronic Disease States; After Effects of Severe Hypoxia.

Tomashefski, Joseph F.: Cardiopulmonary Physiology; Environmental Stresses in Chronic Disease States; Hyper-and-hypo-ventilation.

Wick, Robert L.: Effects of Drugs and Other Stresses in the Flight Environments; Tolerable Levels of Noise and Vibration in Flight.

In the eleven years covered by this history of the research effort of the Department of Preventive Medicine more than sixty-two papers have been published in professional journals and more than twice that number of reports, theses and formal speeches have been prepared by the faculty and staff.

## VII. MISCELLANEOUS ACTIVITIES

Not mentioned previously is the fact that the Department of Preventive Medicine has administered the Medical Education for National Defense Program since the mid-fifties. Dr. Ashe was coordinator for Ohio State University until his resignation when Dr. Shillito was appointed to this position. Each year the MEND program makes possible trips for medical students, interns and residents, and faculty members to various symposia and short courses usually located on or in the vicinity of military installations. Mention also should be made of Post Graduate courses of which eleven have been given in Aerospace Medicine and four in Occupational Medicine. Special courses have also been set up for FAA medical examiners and various professional personnel of the state health organizations.

VIII. FINANCIAL

As referred to in previous pages, the Department of Preventive Medicine has grown rapidly since 1958 in activities and size. Concomitantly, the annual budget in this period has increased almost ten fold from approximately \$150,000 per annum to the current 1968-1969 budget of \$1,342,937.

1968 - Sources of Support

State Support	\$ 214,012
Personal Health Service	26,317
Regional Medical Program	171,162
Agency for International Development	23,395
Training Grants	47,366
NASA	223,668
US Public Health Service	34,200
Atomic Energy Commission	6,200
Industrial	
Research Grants	410,251
Coronary Heart Study	70,035
Pilot Performance Under Stress Project	17,720
Pilot Performance in Light Aircraft Project	20,000
NASA Vibration Study	78,611
NASA Critical Review and Analysis	
Total	\$1,342,937

## DEPARTMENT OF PREVENTIVE MEDICINE

## IX. FACULTY BIOGRAPHIES

AMBUEL, J. PHILIP

See Department of Pediatrics

ANDERSON, LINNEA

See School of Allied Med. Prof.

ARNOLDI, LOUIS B.

M.D., N. Y. U. 1938; Asst. Prof. 1965-1967.

ASHE, WILLIAM F.

Environmental Medicine

A.B., Oberlin Coll. 1932; M.D., Western Reserve U. 1936; Prof. and Chr. 1954-1965; Prof., Dept. of Medicine 1957-1965; Emer. Prof. 1965-1966; Leave of Absence August, 1964-1965; Died February 27, 1966.

BANKS, FRANKLIN R.

## Medical Sociology

B.A., Rollins Coll. 1956; M.A., O.S.U. 1959; Ph.D. 1968; Instr. 1966-1968;  
Asst. Prof. 1968-.

BASHE, J. WINSLOW

M.D., Loyola 1945; Asst. Prof. 1961-1962.

BERRY, CHARLES A.

M.D., U. of California 1947; Asst. Prof. 1964-1967; Assoc. Prof. 1967-.

BILLINGS, CHARLES E.

# Aerospace Medicine

M.D., N. Y. U. 1953; M.S., O.S.U. 1960; Instr. 1960-1963; Asst. Prof. 1963-1967; Assoc. Prof. 1967-. Dept. of Aviation. Instr. 1961-1963; Asst. Prof. 1963-1967; Assoc. Prof. 1967-. Dept. of Physiology. Instr. 1961-1963; Asst. Prof. 1963-.

CARMICHAEL, JACK C.

## Industrial Hygiene

B.S., U. of Texas 1942; M.S., Johns Hopkins 1947; Asst. Prof. 1967-; Admin. Asst. to the Dean.

CARTER, EARL T.

# Aerospace Medicine

B.S., Northwestern U. 1944; M.S., Northwestern U. 1950; Ph.D., U. of Texas 1955; M.D., Northwestern U. 1948; Instr. 1956-1961; Asst. Prof. 1956-1961, Departments of Physiology and Preventive Medicine.

CASBERGUE, JOHN P.

See School of Allied Med. Prof.

CATTERSON, ALAN D.

M.D., U. of Colorado 1955; M.S., O.S.U. 1962; Asst. Prof. 1964-.

CHIRIKOS, THOMAS N.

## Biometry

B.A., Coe Coll. 1960; M.A., O.S.U. 1963; Ph.D. 1967; Asst. Prof. 1968-.

COULTER, ELIZABETH J.

M.A., Radcliffe 1946; Ph.D., 1948; Asst. Prof. 1963-1965.

DAVIS, WILLIAM W.

## Occupational Medicine

B.S., U. of Michigan 1933; M.D., Vanderbilt U. 1937; Asst. Prof. 1953-.

DINES, JOHN H.

Environmental Medicine

B.S., U. of London; M.B., Middlesex Hospital Medical School, 1954; Asst. Prof. 1962-1966.

- DINMAN, BERTRAM D. Occupational Medicine  
D.Sc., U. of Cincinnati 1957; M.D., Temple U. 1951; Asst. Prof. 1957-1959;  
Assoc. Prof. 1959-1964; Prof. 1964-1965; Instr. Dept. of Medicine 1957-1965.
- DWORK, RALPH E. Public Health  
B.S., New York U. 1935; M.P.H., Columbia U. 1949; L.R.C.P., L.R.F.P.S.,  
Anderson Coll. of Medicine, Glasgow, Scotland 1946; Asst. Prof. 1951;  
Assoc. Prof. 1958-1961.
- ELLINGSON, HAROLD V. Preventive Medicine  
M.S., U. of Wisconsin 1936; Ph.D. 1939; M.D., 1941; M.P.H. Johns Hopkins  
1946; Prof. and Chairman 1966-.
- ERTEL, J. PHILIP See Department of Pediatrics
- FANCHER, PAUL S. Internal Medicine  
A.B., Ohio Wesleyan U. 1925; M.D., O.S.U. 1930; Prof. 1958-; Director,  
University Health Service, 1958-.
- FISHER, F. DAVID  
M.S., U. of Rochester 1957; Asst. Prof. 1968-.
- FRAJOLA, WALTER J. See Department of Pathology
- FRANKS, WILBUR R.  
M.D., U. of Toronto, 1928; Asst. Prof. 1960-1962.
- FREEDMAN, TOBY  
M.D., Stanford U. 1948; Asst. Prof. 1961-1968; Assoc. Prof. 1968-.
- GILMORE, NORMA M. Nutrition  
Ph.D., Michigan State U. 1965; Asst. Prof. 1965-1967.
- GODDARD, JAMES L.  
M.D., George Washington U. 1949; M.P.H., Harvard 1955; Asst. Prof.  
1960-1961.
- GOODLOE, OLLIE M. Public Health  
B.Sc., Vanderbilt U. 1927; M.P.H., Harvard School of Public Health 1935;  
M.S., U. of Louisville 1932; Asst. Prof. 1948-1957, 1958-.
- GRANT, LEE B.  
M.D., Louisville 1945; Asst. Prof. 1964-1965.
- GRESHAM, GLEN E. Internal Medicine  
A.B., Harvard Coll. 1954; M.D., Columbia U. 1958; Asst. Prof. 1964-1967;  
Assoc. Prof. 1967-; Instr. Dept. of Medicine 1964-1968; Asst. Prof. 1968-.
- GULLETT, CHARLES C.  
M.D., Indiana U. 1947; Asst. Prof. 1964-.

- HANKS, THRIFT G. Aviation Medicine  
B.S., U. of Illinois 1934; M.S., 1935; M.D., 1939; Asst. Prof. 1956-1962.
- HARDING, GEORGE T. Psychiatry  
M.D., Loma Linda U. 1953; Asst. Prof. 1962-1967.
- HEGGEN, DARROL W. Biometry  
M.S., Iowa State 1960; Ph.D., U. of Minnesota 1969; Asst. Prof. 1968-.
- HERRINGTON, FRANK H. Industrial Medicine  
B.S., Middlebury Coll. 1925; M.D., New York U. 1931; Instr. 1956; Asst. Prof. 1958-1959.
- HOOVER, GEORGE N. Environmental Medicine  
B.S., Glendale Coll. 1956; Ph.D., U. of California Berkeley, 1959; Asst. Prof. 1959-1962.
- HUBBARD, RACHEL Nutrition  
B.S., O.S.U. 1943; M.S., Cornell 1951; Asst. Prof. 1961-1964.
- HUTCHINSON, GLEN D. Personnel Health  
M.D., U. of Nebraska 1935; M.P.H., U. of California 1947; Asst. Prof. 1968-.
- HYDE, ALVIN S.  
M.D., Tulane U. 1953; Ph.D., 1957; Asst. Prof. 1962-1967.
- JONES, JEAN Nutrition  
M.S., O.S.U. 1950; Asst. Prof. 1963-1965.
- KAUFMAN, WILLIAM C.  
Ph.D., U. of Washington 1961; Asst. Prof. 1962-1967.
- KELLER, MARTIN D. Community Health  
M.D., Cornell 1952; Ph.D., N.Y.U. 1953; M.P.H., Columbia 1958; Asst. Prof. 1958-1960; Assoc. Prof. 1962-1966; Prof. 1966-; Department of Medicine Instr. 1958-1960; Asst. Prof. 1962-. Sch. Allied Med. Professions Prof. 1967-.
- LANESE, RICHARD R. Social Psychology  
M.A., O.S.U. 1961; Ph.D., 1966; Asst. Prof. 1966-.
- LARGENT, EDWARD J. Occupational Hygiene  
A.B., Westminster Coll. 1935; Asst. Prof. 1957-1960.
- LENTZ, EDWARD A.  
B.S., N.H.A., Wayne State 1956; Asst. Prof. 1958.
- LEUCHTER, HEINRICH J. Pulmonary Diseases  
M.S., U. of Frankfurt, Germany; M.P.H., Johns Hopkins U. 1951; M.D., U. of Wuerzburg, Germany 1944; Asst. Prof. 1956; Assoc. Prof. 1958-1965.
- LEWIS, MARTHA N. See School of Allied Med. Prof.



LIEBAN, JAN

M.B., Ch.B., U. of Liverpool, England 1943; M.P.H., Harvard 1949; Asst. Prof. 1963-1968.

LOVELACE, W. RANDOLPH II

M.D., Harvard 1934; M.S., Minnesota 1939; Asst. Prof. 1961-1965.

MCCONKEY, ROSEMARY A.

See School of Allied Med. Prof.

MARTENEY, ANNABELLE L.

Nutrition

M.S., U. of Iowa 1963; Asst. Prof. 1966.

MEILING, RICHARD L.

See Dept. of Obstetrics  
and Gynecology

MILLIKEN, SEWALL O.

B.S., U. of Maine 1939; M.P.H., U. of Michigan 1950; Instr. 1951-1954; Asst. Prof. 1954-1957; and 1958-.

NAYLOR, AUDREY J.

Community Pediatrics

M.D., U. of California 1956; M.P.H., U.C.L.A. 1965; Assoc. Prof. 1968-.  
Dept. of Pediatrics, Asst. Prof. 1968-.

NELSON, DONALD G. M.

Asst. Prof. 1960-1961.

ODLAND, LAWRENCE T.

M.D., U. of So. California 1951; M.P.H., Johns Hopkins 1954; Asst. Prof. 1966-1968.

ORTH, GERTRUDE M. (Mrs. Busdicker)

Biochemistry

Ph.D., O.S.U. 1961; Asst. Prof. 1964-1966.

PALCHANIS, WILLIAM T.

Internal Medicine

M.S., Jefferson Medical Coll. 1916; Asst. Prof. 1943; Assoc. Prof. 1957-1964;  
Prof. Emer. 1964; University Health Service 1943-1964; Asst. Director 1957  
and Assoc. Director 1958-1964.

PARKER, MILTON M.

See Department of Psychiatry

PETERSON, JOHN A.

M.D., Indiana U. 1949; Asst. Prof. 1967-1968; C. Sc., Cincinnati 1957.

POWELL, GEORGE W.

M.D., U. of Buffalo 1946; Asst. Prof. 1965-1966.

PRIDEAU, JEANNE S.

Nutrition

M.S., Kansas State U. 1965-1966.

PRIOR, JOHN A.

See Department of Medicine

QUASHNOCK, JOSEPH M.

M.D., U. of Pittsburgh 1937; Ph.D., St. Louis U. 1953; Assoc. Prof. 1962-1963; Prof. 1963-1966.

- RIDDLE, JACKSON W. See Department of Bacteriology
- ROBERTS, LESTER B. Environmental Medicine  
B.S., U. of Wyoming 1927; Asst. Prof. 1962-1964; **Prof. 1964-1969.**
- ROMAN, ELEANOR M. See School of Allied Med. Prof.
- RUSTAGI, JAGDISH S. Mathematics  
B.A., U. of Delhi, India 1944; M.A., 1946; Ph.D., Stanford 1956; Prof. 1967-; Department of Mathematics, (Primary Appt.) Assoc. Prof. 1963-1965; Prof. 1965-.
- SCHREUDER, OTIS B. Aviation Medicine  
B.S., U. of Washington 1915; M.D., U. of Oregon 1924; Asst. Prof. 1958-1965.
- SCHULTE, JOHN H. Occupational Medicine  
M.D., U. of Cincinnati 1948; M.S., Reed Coll. 1957; D. Sc., U. of Cincinnati 1962.
- SCHWICHTENBURG, ALBERT  
M.D., U. of Oregon 1929; Assoc. Prof. 1961-.
- SCOBIE, KATHLEEN See School of Allied Med. Prof.
- SHAFFER, THOMAS E. See Department of Pediatrics
- SHARP, JOAN L. See School of Allied Med. Prof.
- SHILLITO, FREDERICK H. Environmental Medicine .  
A.B., U. of Michigan 1927; M.D., Harvard 1931; Prof. 1961-; Acting Chairman 1964-1966; Vice Chairman 1968-; Department of Medicine, Prof. 1961-; Sch. Allied Med. Professions, Prof. 1967-.
- SMITH, JOHN E.  
A.B., U. of Maine 1934; M.D., U. of Vermont 1937; Asst. Prof. 1960-1963.
- STUHRING, DONALD H.  
M.D., Columbia 1950; Asst. Prof. 1964-1968.
- SWEARINGEN, JOHN Environmental Physiology  
B.S., Purdue U. 1936; M.S., Purdue U. 1937; Asst. Prof. 1957-1959.
- TOMASHEFSKI, JOSEPH F. Pulmonary Diseases  
M.D., Hahnemann Medical Coll. 1947; Asst. Prof. 1961-1965; Assoc. Prof. 1965-; Dept. of Medicine Asst. Prof. 1953-; Dept. of Physiology Asst. Prof. 1955-1964; Assoc. Prof. 1964-1967.
- TOWNSEND, WILLIAM A. Community Health  
M.D., U. of Minnesota 1947; M.P.H., Harvard 1954; Asst. Prof. 1968-.
- VON GIERKE, HENNING E. Acoustics  
D.E., Tech. U. Karlsruhe Germany 1944; Asst. Prof. 1962-1963; Assoc. Prof. 1963-.

- WASHAM, WILLIAM T. Legal Medicine  
M.S., O.S.U. 1945; L.L.B., Franklin U. 1965; J.D., Capital U. 1966; Asst. Prof. 1967-.
- WEBB, PAUL P. Environmental Physiology  
M.D., U. of Virginia 1944; M.S., U. of Washington 1952; Asst. Prof. 1967-.
- WEIR, FRANCIS W. Toxicology  
B.S., U. of Pittsburgh 1957; M.S., U. of California 1967; Ph.D., U. of California 1968; Asst. Prof. 1968-.
- WENBERG, BURNES G. See School of Allied Med. Prof.
- WENTWORTH, FREDERICK H. Public Health  
M.P.H., U. of Michigan 1955; M.D., Cornell U. 1949; Instr. 1953; Asst. Prof. 1957; Assoc. Prof. 1958-1963.
- WENZEL, RICHARD L. Public Health  
A.B., Marietta Coll. 1943; M.D., O.S.U. 1946; Instr. 1953; Asst. Prof. 1957-1958.
- WENZEL, RICHARD T.  
M.D., O.S.U. 1946; M.P.H., U. of Michigan 1957; Instr. 1953-1957; Asst. Prof. 1959-1960.
- WESTRA, DONALD F. Legal Medicine  
L.L.B., St. Mary's U. 1954; Asst. Prof. 1967-; Admin.: Asst. Dean.
- WICK, ROBERT L. Aerospace Medicine  
M.D., U. of Pittsburgh 1959; M.S., O.S.U. 1962; Asst. Prof. 1967-.
- WILCE, JOHN W. See Department of Medicine
- WINTERFELDT, ESTER  
M.S., U. of Oklahoma 1957; Assoc. Prof. 1965-1967.
- YERG, RAYMOND A.  
M.D., Georgetown 1942; M.P.H., Harvard 1955; Asst. Prof. 1966-1968.

INSTRUCTORS

Berg, Lawrence E., B.S., 1961

Booth, Richard W., M.D., 1959-1961

Brierley, Nancy Lea E., M.S., 1968

Burk, Donald H., M.D., 1962-1966

Campbell, Donald A., M.P.H., 1966-

Chase, Robert C., M.S., 1966-

Chu, William P., M.P.H., 1963-1964

Decker, Harold A., M.D., 1963-1964

Ehrlich, Michael G., M.D., 1965-1967

Fletcher, Florence, M.D., 1963-1966

Fletcher, Joyce M., M.S., 1965-1966

Gardner, Patricia, M.S., 1963-1965

Gernes, Anna M., B.S., 1965-1966

Gibert, John G., Sr., M.D., 1968-

Giraldo, Julian, M.D., M.S., 1967-

Grawey, Gerald W., M.D., 1960-1964

Greenlee, Allan M., D.V.M., M.P.H., 1967-

Greenwald, Peter, M.D., 1963-1964

Hammond, Marion, M.S., 1961-1962

Harold, Frank C., M.D., 1962-

Hipp, Larry L., M.D., 1968

Kaplan, Benjamin, M.D., 1956-1966

Lowery, Howard W., M.D., 1965-

Lynn, Margaret, M.S., 1963

Mammen, Harold W., M.D., 1961-1962

Marsicano, Anthony R., M.D., 1946-1959

McCally, Michael, M.D., 1966-

INSTRUCTORS (continued)

Medina, Sylvia M., M.D., 1967-1968

Myers, Robert C., M.D., 1966-1968

Nick, William V., M.D., L.L.B., 1966-

Price, Bertram P., M.S., 1966

Robb, Bernadine, M.S., 1964

Rowe, Henry A., M.D., 1960-1961

Sandmann, James F., M.P.H., 1967-

Siddall, A. Clair, M.P.H., 1965-1967

Stephan, John D., M.D., 1965-

Stumbo, Phyliss, M.S., 1963-1965

Thomas, Anthony, M.D., 1962-

Wain, Harry, M.D., 1965